

















RMP *Acoustics* Background

Formed in 1967

17 Consultants

Based in Napier University - Acoustic consultancy division

Staff also work within Building Performance Centre (research div.)

Multi-award winning projects RIBA Stirling Prize (2001), UK's Most Sustainable Building (2007)

Acoustic detailing for maximum credits



Outline

- Credits approach v ADE
- Credits and real targets
- System approach whole house
- Credits approach and what we are building now
- Structure composition comparisons
 - Blockwork houses
 - Timber houses
 - Lightweight steel frame houses
- Apartmentshold on to your hats!!!

Credits approach v ADE





45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59





























System approach





Recent changes



Changes to core wall widths (pre-linings)

HOUSES	pre 2003	Robust Details	The CODE
BLOCKWORK (cavity walls)	250	275	300
TIMBER FRAME (sheathed)	220	250	270
LIGHTWEIGHT STEEL FRAME	180	220	250

Attached houses



- 10 terraced houses (site of 100 units)
- Airborne sound insulation tests
- Tests 54 49 50 53 47
- Credits 4 1 3 4 0
- Plots tested get credits (specific to their test)
- Plots not tested get lowest recorded credits
- 8 plots get credits 92 plots get 0 credits (unless testing continues)

Recent changes



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Houses & credits



HOUSES AND CREDITS	1	3	4
BLOCKWORK (cavity width)	75mm	100mm*	?
TIMBER FRAME (between sheathing EWT2)	40mm	50mm	75mm**
LIGHTWEIGHT STEEL FRAME (between linings)	180mm	220mm	250mm+

* Not always on lower floor levels and also requires care in build for all levels

- ** requires Acoustic Wall Strap
- + requires no ties (separate frames)

Houses & credits



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Apartments & credits





Apartments & credits





Apartments & credits



20 flats - Airborne and impact sound insulation tests

 Wall Airborne Tests 	53	53	53	55	
Credits	4	4	4	4	
Floor Impact Tests	52	49	51	52	
• Credits	4	4	4	4	
Floor Airborne Tests	50	47	49	47	
Credits	3	0	1	0	
• Final Credits	<u>3</u>	0	1	<u> </u>	





PRECAST CONCRETE PLANKS and BLOCKWORK

 Screed finish not sufficient for impact and will require bonded soft floor coverings, Or separating floors will require floating floor treatments (FFTs) and preferably resilient batten systems

- Substantial increase in floor depths will be required
- BPC are actively working on a 3 and 4 credit apartment system which avoids substantial changes to design
- System will also improve other regulatory issues within the Code
- •215mm Solid blockwork walls will require independent linings





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Apartments – design issues for 3 and 4 credits



TIMBER FRAME APARTMENTS

- Secondary ceilings may not always hit 3 and 4 credits due to cavity resonance and resilient bar fixings
- Floors will require to move to independent ceiling joists to hit
 4 credits repeatedly
- for at least 3 credits repeatedly move from 240mm I-joists to 302mm I-joists
- Batten floors less risky than platform floors
- Take care with horizontal and vertical service voids

Attached dwellings



CONFLICTING or ADVANTAGEOUS FACTORS

- Thermal requirements will need to be included in new designs.
- Green Guide materials
- Systems compatible with air tightness, robustness, modern methods of construction and cope with multiple service penetrations within structure for micro-renewables

Summary



- Timber frame and lightweight steel frame more likely to hit 4 credits repeatedly than blockwork at present.
- Blockwork apartments highly restricted by floors performance – please contact BPC / RMP if you wish to trial new 3 and 4 credit systems
- Design details provided for key structures
- Ensure you receive acoustic design advice from the outset.
- Liase with your consultants throughout amendments to drawings

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